






State-of-the-Art Building Concepts Lower Energy Bills

Pulte Homes — Las Vegas, Nevada

Building America is sponsored by the U.S. Department of Energy. The program aims to:

- Reduce energy use by 50% and reduce construction time and waste
- Improve indoor air quality and comfort
- Encourage a systems-engineering approach for design and construction of new homes
- Develop system cost/performance tradeoffs that improve housing quality and performance without increasing cost
- Conduct cost-shared research to accelerate development and adoption of innovative building systems.


Houses built by Pulte Homes as part of the U.S. Department of Energy's Building America program in Las Vegas, Nevada, save money for the home owners by reducing electric air-conditioning costs and gas heating costs with little or no additional investment. And, the houses have better indoor air quality than typical new construction. Pulte selected the following package of features to achieve 35%–40% heating and cooling energy savings in the hot, dry Las Vegas climate:

-  **Windows** — Spectrally selective glass, which lets visible light through, but keeps the solar heat gain out. This lowers the cooling load during the summer and reduces the fading of furniture caused by sunlight.
-  **Roofing System** — Unvented roofing system, which changes the home's thermal barrier from the ceiling to the roof deck. Ductwork for air conditioning and heating is located "inside," surrounded by attic air at close to 80°F rather than as much as 140°F, as in a typical attic.
-  **Heating System** — Smaller heating system, since the house can be so energy efficient in the heating mode that the gas water heater located in the garage provides hot water and also space heating in many houses. In other houses, the furnace is downsized and uses an efficient sealed-combustion design.
-  **Cooling System** — Smaller air-conditioning unit, since improved air-tightness and energy efficiency measures allow the air conditioner to be downsized by 30%.
-  **Comfort** — Improved comfort resulting from less solar heat gain and greater insulation. Highly insulated wall assembly includes 2" x 6" framing with sprayed-in cellulose insulation, which is a nontoxic material made from recycled newspaper. A layer of foam insulation is also placed on the exterior wall under the stucco.



Building Science Consortium/PLX09117

This Building America house built by Pulte Homes in Las Vegas meets ENERGY STAR® requirements and features an unvented roof, spectrally selective windows, and mechanical ventilation.

-  **Indoor Air Quality** — Supply air ventilation, which leads to better indoor air quality than typical houses. The ventilation system provides fresh air, while reducing negative pressures that can result in radon and pesticide ingress and the nuisance of dust marking on carpeting.

Pulte Homes is working with the Building Science Consortium (BSC), one of the five Building America industry teams, and is currently constructing houses to these Building America standards in seven Las Vegas communities. Pulte also received an Energy Value Housing Gold Award in 1999 from the National Association of Home Builders. All Building America houses built by Pulte receive an ENERGY STAR® label, which certifies that the energy efficiency of these houses is at least 30% better than typical construction. The ENERGY STAR® program is a joint effort of the U.S. Department of Energy and the Environmental Protection Agency.





BUILDINGS FOR THE 21ST CENTURY

Buildings that are more energy-efficient, comfortable, and affordable ... that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

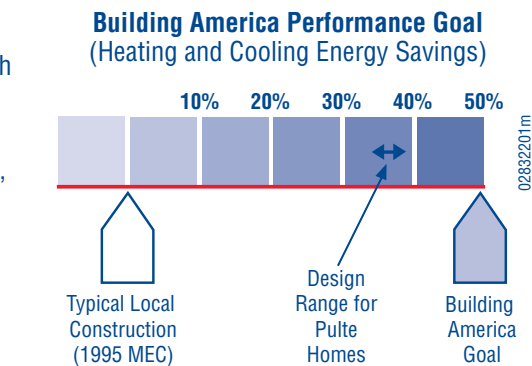
- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy- and money-saving opportunities to builders and buyers of homes and commercial buildings
- Works with state and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to states and communities for deployment of energy-efficient technologies and practices.

The Approach

Building America's systems-engineering approach unites segments of the building industry that have traditionally worked independently of one another. It forms teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades. More than 230 different companies make up the five Building America teams:

-  Building Science Consortium (BSC)
-  Consortium for Advanced Residential Buildings (CARB)
-  Hickory Consortium
-  Industrialized Housing Partnership.
-  Integrated Building and Construction Solutions (IBACOS) Consortium

VISIT OUR WEB SITES AT:
WWW.EREN.DOE.GOV/BUILDINGS/BUILDING_AMERICA



The Building America teams design houses from the ground up, considering the interaction between the site, building envelope, mechanical systems, and other factors. With this approach, the teams can incorporate energy-saving strategies at little or no extra cost.

WWW.PATHNET.ORG/HOME.HTML



WWW.ENERGYSTAR.GOV



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An electronic copy of this document is available on the Building America Web site:
www.eren.doe.gov/buildings/Building_America

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